

WHAT IS CLAIMED IS:

1. A painting apparatus comprising:  
an arm adapted for use with a painting robot, said arm having a housing formed  
5 of a non-conductive material;  
a color changer mounted external to said housing, said color changer adapted to  
be connected to a paint supply;  
a paint canister mounted inside said housing; and  
a paint transfer line connecting said color changer to an interior of said paint  
10 canister for transferring paint from said color changer to said interior of  
said paint canister.
2. The apparatus according to Claim 1 wherein said housing is formed of  
Lauramid material.  
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3. The apparatus according to Claim 1 wherein said paint transfer line is formed  
of an electrically insulating material.
4. The apparatus according to Claim 1 wherein said paint transfer line is formed  
20 of an FEP material.
5. The apparatus according to Claim 1 wherein said paint canister is positioned  
adjacent a side of said housing opposite said one side.
- 25 6. The apparatus according to Claim 1 including a canister manifold connected  
between said paint canister and said paint transfer line.
7. The apparatus according to Claim 1 including a wrist attached to said arm,  
said wrist having a wrist housing formed of an electrically insulating material and said  
30 wrist being adapted to mount a paint applicator.

8. The apparatus according to Claim 1 including a piston ram mounted in said housing and being connected to said paint canister for controlling a flow of the paint into and out of said paint canister.

5           9. The apparatus according to Claim 8 wherein said piston ram includes a piston releasably attached to a ram body by a ram locking key.

10           10. The apparatus according to Claim 8 including a canister quick disconnect for releasably attaching said paint canister to said piston ram.

11. The apparatus according to Claim 10 wherein said canister quick disconnect includes convex locking means on said piston ram releasably engaged with concave locking means on said paint canister.

15           12. The apparatus according to Claim 8 wherein said piston ram includes a ball screw and cooperating ball screw nut and including a drive motor connected to said ball screw for actuating said piston ram.

20           13. A painting apparatus comprising:  
an arm adapted for use with a painting robot;  
a paint canister mounted inside said arm;  
a piston ram mounted inside said arm and having a piston movable inside said paint canister; and  
a canister quick disconnect releasably attaching said paint canister to said piston  
25           ram.

14. The apparatus according to Claim 13 wherein said piston ram includes a ram body and said piston is releasably attached to said ram body by a ram locking key.

30           15. The apparatus according to Claim 13 wherein said canister quick disconnect includes convex locking means on said piston ram releasably engaged with concave locking means on said paint canister.

16. The apparatus according to Claim 13 wherein said piston ram includes a ball screw and cooperating ball screw nut and including a drive motor connected to said ball screw for actuating said piston ram.

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17. The apparatus according to Claim 13 including a drive motor connected to said piston ram for moving said piston in said paint canister wherein a torque generated by said drive motor represents a pressure being applied to said piston by paint in said paint canister.

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18. A method of operating a robotic painting apparatus comprising the steps of:

a) providing a color changer adapted to be connected to a paint supply;

b) providing a paint canister connected to a paint applicator;

c) connecting an electrically insulating paint transfer line between the color  
15 changer and an interior of the paint canister;

d) transferring a quantity of paint from the color changer to the interior of the  
paint canister;

e) cleaning and drying an interior of the paint transfer line;

f) applying high voltage to charge the quantity of paint; and

20 g) dispensing the paint from the paint canister to the paint applicator.

19. The method according to Claim 18 including performing said step d) by transferring paint remaining in the paint transfer line to the paint canister prior to performing said step e).

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20. The method according to Claim 18 including starting said step f) before completing said step e).

21. The method according to Claim 18 including sensing a pressure generated as  
30 the quantity of paint is being transferred during said step d) and varying a rate of the transfer in response to the sensed pressure.